

REMARKS

Reconsideration of the present application is respectfully requested.

Claims 7, 13, 16, 18, 25 and 36 have been objected to due to noted informalities. In response, Applicant has amended the claims mentioned above to correct the informalities, and now believes that those claims are in allowable format.

Claims 1-12 and 19-30 have been rejected under 35 U.S.C. §103 as being unpatentable over Friederich (USP 6,393,149) in view of Stolfo (USP 5,748,780). In response, Applicant has amended claims 1, 3, 19 and 21 to differentiate the present invention from the cited references. For reasons that will now be discussed, these claims are allowable.

Amended claim 1 recites a database managing apparatus having an attribution record group forming means for classifying data, which is requested to be stored in a database, according to attributions defined in the database. Therefore, when a search request for searching the database file is received, a data decompressing means has only to decompress a particular attribution record group that is to be searched, and does not need to decompress the other attribution record groups different from the particular attribution record group. As a result, the database managing apparatus can reduce the number of unnecessary steps during the decompression of record data belonging to the other attributions than the attribution to be searched. It can therefore retrieve the requested record in a short amount of time (page 3, lines 8-19).

Further, amended claim 1 recites that a data compressing means compresses a particular attribution record group that is to be searched with a first compression method, and compresses the other attribution record groups with a second compression method. The first compression method compresses the attribution record group so that the attribution record group after being compressed can be decompressed faster than that compressed by using the second compression

method. The second compression method compresses the attribution record group so that a compression rate is higher than that of the first compression method. According to the database managing apparatus, the particular attribution record group can be decompressed fast for searching. Thus, for example, the other attribution record corresponding to the searching result can only be decompressed. Therefore, since a decompression speed of the particular attribution record group is fast and a data compression rate is high, the database managing apparatus can perform high-speed searching and prevent a total size of the compressed data from increasing (e.g., page 19, lines 15-19). Incidentally, amended claim 1 corresponds to the combination of original claims 1 and 2.

Amended claim 3 recites that a data decompressing means decompresses the particular attribution record group when a search request for searching the database file is received, and a searching means searches a target record containing a search key in the particular attribution record group. The data decompressing means further decompresses the other attribution record groups when the searching means finds the target record. Therefore, the database managing apparatus can search the target record at first, and can then decompress the other attribution record according to a search result. Accordingly, total processing time for searching can be reduced.

Independent claim 6 recites that the data compressing means compresses only the other attribution record groups. That is, the data compressing means does not compress the particular attribution record group intentionally so that the database managing apparatus can use data of the particular attribution record group for searching without waiting for the data decompression process. As a result, the database managing apparatus can search the target record as soon as possible and can therefore reduce total processing time for searching (page 13, line 12 to page 14, line 3).

Friederich discloses a data compression system used for a navigation application program. However, Friederich fails to teach or suggest an attribution record group forming means for classifying data according to attributions defined in the database, and use of data classified by the attribution record group forming means as in claims 1 and 3. Further, Friederich fails to teach or suggest a data compressing means for compressing only the other attribution record groups as in claim 6. Therefore, the data compression system disclosed by Friederich cannot perform searching at high speeds and cannot prevent a total size of the compressed data from increasing.

Stolfo discloses an apparatus for automated image processing, image compression and pattern recognition. However, Stolfo fails to teach or suggest a data compressing means for compressing a particular attribution record group that is to be searched with a first compression method by which the attribution record group after being compressed can be decompressed faster, and compresses the other attribution record groups with a second compression method by which compression can be performed at high rate as in amended claim 1. Stolfor also fails to teach or suggest that the data decompressing means decompress the particular attribution record group when a search request for searching the database file is received, and further decompresses the other attribution record groups when a searching means finds the target record as in amended claim 3. Further, Stolfor fails to teach or suggest the data compressing means for compressing only the other attribution record groups as in claim 6. Therefore, the apparatus disclosed by Stolfor cannot perform searching process at high speeds and cannot prevent a total size of the compressed data from increasing.

Therefore, even if Friederich were combined with Stolfor, the present invention as recited in claims 1, 3 and 6 would still not be taught or suggested by combination of the above mentioned references. Applicant respectfully requests the Examiner's §103 rejection of claims

1, 3 and 6 be withdrawn. Because claims 19, 20 and 24 correspond generally to claims 1, 3 and 6 respectively albeit in method format, these claims are allowable for the same reasons as claims 1, 3 and 6. Further, as claims 4, 5, 7-12, 22, 23 and 25-30 depend from amended claims 1, 3, 6, 19, 21 and 24, respectively, they are allowable for the same reasons as amended claims 1, 3, 6, 19, 21 and 24.

Claims 13-18 and 31-36 have been rejected under 35 U.S.C. §103 as being unpatentable over Friederich (USP 6,393,149) in view of Farber (USP 6,415,280). For reasons that will now be discussed, these claims are allowable.

Independent claims 13 and 16 recite that a data decompressing means decompress the particular attribution record group when a search request for searching the database file is received, and a searching means searches a target record containing a search key in the particular attribution record group. The data decompressing means further decompresses the other attribution record groups when the searching means finds the target record. Therefore, the database managing apparatus can search the target record at first, and can then decompress the other attribution records according to search results. Accordingly, total processing time for searching can be reduced.

Further, since independent claim 16 recites that the data compressing means compresses only the other attribution record groups, the present invention recited in claim 16 includes the same allowable for the same general reasons as claim 6.

Farber discloses an apparatus in a data processing system for identifying a data item in the system (e.g., column 3, lines 26-34). However, Farber fails to teach or suggest a data decompressing means that decompresses the particular attribution record group when a search request for searching the database file is received, and further decompresses the other attribution record groups when a searching means finds the target record as in claims 13 and 16. Further,

Farber fails to teach or suggest the data compressing means for compressing only the other attribution record groups as in claim 16. Therefore, the apparatus disclosed by Farber cannot perform search processing at high speeds and cannot prevent a total size of the compressed data from increasing.

Therefore, even if Friederich were combined with Farber, the present invention as recited in claims 13 and 16 would still not be taught or suggested by combination of above mentioned references. Applicant respectfully requests the Examiner's §103 rejection of claims 13 and 16 be withdrawn. Because claims 31 and 34 correspond generally to claims 13 and 16 respectively albeit in method formats, these claims are allowable for the same reasons as the claims 13 and 16. Further, as claims 14, 15, 17, 18, 32, 33, 35 and 36 depend from independent claims 13, 16, 31 and 34, respectively, they are allowable for the same reasons as independent claims 13, 16, 31 and 34.

In view of the above amendments and remarks, the present application is now believed to be in condition for allowance. A prompt notice to that effect is respectfully requested. A petition for a 2-month extension of time and a check for the requisite extension fee is enclosed. Please change any additional unforeseen fees that may be due to Deposit Account No. 50-1147.

Respectfully submitted,

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**MARKED UP VERSION OF AMENDED CLAIMS**

**IN THE CLAIMS**

1. (Amended) A database managing apparatus comprising:  
attribution record group forming means for classifying data, which is requested to be stored into a database, according to attributions defined in the database, and for making plural attribution record groups corresponding to each of the attributions;  
data compressing means for compressing the attribution record groups in a unit of each of the attribution record groups; and  
file forming means for combining each of the attribution record groups, which are compressed by the data compressing means, and for forming a data base file[.],  
wherein the data compressing means compresses a particular attribution record group, which is to be searched, with a first compression method, and compresses the other attribution record groups, which are different from the particular attribution record, with a second compression method,  
the first compression method compresses the attribution record group so that the attribution record group after being compressed can be decompressed faster than that compressed by using the second compression method, and  
the second compression method compresses the attribution record group so that a compression rate is higher than that of the first compression method.

3. (Amended) [A database managing apparatus according to claim 1, further comprising:] A database managing apparatus comprising:

attribution record group forming means for classifying data, which is requested to be stored into a database, according to attributions defined in the database, and for making plural attribution record groups corresponding to each of the attributions;

data compressing means for compressing each of the attribution record groups into blocks of data;

file forming means for combining each of the attribution record groups, which are compressed by the data compressing means, and for forming a data base file;

data decompressing means for decompressing a particular attribution record group, which is to be searched, when a search request for searching the database file is received; and

searching means for searching for a target record containing a search key in the particular attribution record group,

wherein the data decompressing means further decompresses the other attribution record groups, which are different from the particular attribution record group, when the searching means finds the target record.

7. (Amended) A database managing apparatus according to claim 6, wherein the data compressing means compresses each of the other attribution record groups [in a unit of each of the attribution record groups; and] into blocks of data.

13. (Amended) A database record retrieving apparatus for retrieving a target record to be searched from a database file, which is made up of plural attribution record

groups each of which is compressed in a unit of each of the attribution record groups, the database record retrieving apparatus comprising:

data decompressing means for decompressing a particular attribution record group, which is to be searched, when a search request for searching the database file is received; and

searching means for searching for a target record containing a search key in the particular attribution record group,

wherein the data decompressing means further decompresses the other attribution record groups, which are different from the particular attribution record group, when the [searchingmeans] searching means finds the target record.

16. (Amended) A database record retrieving apparatus for retrieving a target record to be searched from a database file, which is made up of plural attribution record groups wherein only the other attribution record groups, which are different from a particular attribution record group to be searched, the database record retrieving apparatus comprising:

data decompressing means for decompressing a particular attribution record group, which is to be searched, when a search request for searching the database file is received; and

searching means for searching for a target record containing a search key in the particular attribution record group,

wherein the data decompressing means further decompresses the other attribution record groups, which are different from the particular attribution record group, when the [searchingmeans] searching means finds the target record.

18. (Amended) A database record retrieving apparatus according to claim [8] 16, wherein:

the database file is made up so that each of the plural attribution record groups is compressed in a unit of each of the attribution record groups,

the data decompressing means reads out only the particular attribution record group from the database file, and decompresses only the particular attribution record group; and

the data decompressing means further decompresses the other attribution record groups, when the searching means finds the target record.

19. (Amended) A method of managing database comprising:

an attribution record group forming step for classifying data, which is requested to be stored in a database, according to attributions defined in the database, and for making plural attribution record groups [(A-E)] corresponding to each of the attributions;

a data compressing step for compressing the attribution record groups in a unit of each of the attribution record groups; and

a file forming step for combining each of the attribution record groups, which is compressed by the data compressing step, and for forming a data base file[.],

wherein the data compressing step compresses a particular attribution record group, which is to be searched, with a first compression method, and compresses the other attribution record groups, which are different from the particular attribution record, with a second compression method,

the first compression method compresses the attribution record group so that the attribution record group after being compressed can be decompressed faster than that compressed by using the second compression method, and

the second compression method compresses the attribution record group so that a compression rate is higher than that of the first compression method.

21. (Amended) [A method of managing database according to claim 19, further comprising:] A database management method comprising:

an attribution record group forming step for classifying data, which is requested to be stored in a database, according to attributions defined in the database, and for making plural attribution record groups corresponding to each of the attributions;

a data compressing step for compressing the attribution record groups into blocks of data;

a file forming step for combining each of the attribution record groups, which is compressed by the data compressing step and for forming a data base file;

a data decompressing step for decompressing a particular attribution record group, which is to be searched, when a search request for searching the database file is received; and

a searching step for searching for a target record containing a search key in the particular attribution record group,

wherein the data decompressing step further decompresses the other attribution record groups, which are different from the particular attribution record group, when the searching step finds the target record.

25. (Amended) A method of managing database according to claim 24, wherein the data compressing step compresses the other attribution record groups [in a unit of each of the attribution record groups; and] into blocks of data.

36. (Amended) A method of retrieving database record according to claim [26] 34, wherein:

the database file is made up so that each of the plural attribution record groups is compressed [in a unit of each of the attribution record groups] into blocks of data,

the data decompressing step reads out only the particular attribution record group from the database file, and decompresses only the particular attribution record group; and the data decompressing step further decompresses the other attribution record groups, when the searching step finds the target record.